Test Report

FORMOSA PLASTICS CORPORATION
NO. 1-1, SHIH-WHA 1ST RD., LIN-YUAN DISTRICT, KAOHSIUNG CITY 832, TAIWAN (R. O. C.)

The following sample(s) was/were submitted and identified by/on behalf of the applicant as:

Sample description : Polypropylene impact copolymer.
Color : White semi-clear.
Material component : 100% Polypropylene copolymer.
Sample receiving date : 2020/12/30.
Testing period : 2020/12/30 - 2021/01/06.
Sample submitted by : FORMOSA PLASTICS CORPORATION

Test requested : As specified by client, with reference to RoHS 2011/65/EU Annex II and amending directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP and DIBP contents in the submitted sample(s).

--- Please see the next page for test result(s) ---
### Test Report

**Report No.:** SFW20C01498  
**Report Issue Date:** 2021/01/06  
**Page:** 2 of 9

**FORMOSA PLASTICS CORPORATION**  
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**Component list / List of materials**

<table>
<thead>
<tr>
<th>No.</th>
<th>Component description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White semi-clear pellets</td>
</tr>
</tbody>
</table>

---

**Test result(s):**

<table>
<thead>
<tr>
<th>Test item(s)</th>
<th>Method</th>
<th>Unit</th>
<th>RL</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium (Cd) (CAS No. 7440-43-9)</td>
<td>With reference to IEC 62321-5:2013. Analysis was performed by ICP-OES.</td>
<td>mg/kg</td>
<td>2</td>
<td>n.d.</td>
</tr>
<tr>
<td>Lead (Pb) (CAS No. 7439-92-1)</td>
<td>With reference to IEC 62321-5:2013. Analysis was performed by ICP-OES.</td>
<td>mg/kg</td>
<td>2</td>
<td>n.d.</td>
</tr>
<tr>
<td>Mercury (Hg) (CAS No. 7439-97-6)</td>
<td>With reference to IEC 62321-4:2013+AMD1:2017. Analysis was performed by ICP-OES.</td>
<td>mg/kg</td>
<td>2</td>
<td>n.d.</td>
</tr>
<tr>
<td>Hexavalent Chromium Cr(VI) (CAS No. 18540-29-9)</td>
<td>With reference to IEC 62321-7-2:2017. Analysis was performed by UV-VIS spectrometry.</td>
<td>mg/kg</td>
<td>8</td>
<td>n.d.</td>
</tr>
</tbody>
</table>

**Polybrominated biphenyl (PBBs)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Test item(s)</th>
<th>Method</th>
<th>Unit</th>
<th>RL</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monobromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Dibromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Tribromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Tetrabromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Pentabromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Hexabromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Heptabromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Octabromobiphenyl</td>
<td></td>
<td></td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
</tbody>
</table>

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Member of the SGS Group
## Test Report

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**FORMOSA PLASTICS CORPORATION**  
NO. 1-1, SHIH-WHA 1ST RD., LIN-YUAN DISTRICT, KAOHSIUNG CITY 832, TAIWAN (R. O. C.)

<table>
<thead>
<tr>
<th>Test item(s)</th>
<th>Method</th>
<th>Unit</th>
<th>RL</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonabromobiphenyl</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Decabromobiphenyl</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Sum of PBBs</td>
<td>---</td>
<td>mg/kg</td>
<td>-</td>
<td>n.d.</td>
</tr>
<tr>
<td><strong>Polybrominated biphenyl ethers (PBDEs)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monobromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Dibromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Tribromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Tetrabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Pentabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Hexabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Heptabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Octabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Nonabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td>Decabromodiphenyl ether</td>
<td>With reference to IEC 62321-6:2015. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>5</td>
<td>n.d.</td>
</tr>
<tr>
<td><strong>Sum of PBDEs</strong></td>
<td>---</td>
<td>mg/kg</td>
<td>-</td>
<td>n.d.</td>
</tr>
<tr>
<td><strong>Phthalates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diisobutyl phthalate (DIBP) (CAS No.84-69-5)</td>
<td>With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>50</td>
<td>n.d.</td>
</tr>
<tr>
<td>Dibutyl phthalate (DBP) (CAS No.84-74-2)</td>
<td>With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>50</td>
<td>n.d.</td>
</tr>
<tr>
<td>Butyl benzyl phthalate (BBP) (CAS No.85-68-7)</td>
<td>With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>50</td>
<td>n.d.</td>
</tr>
<tr>
<td>Di-(2-ethylhexyl) phthalate (DEHP) (CAS No.117-81-7)</td>
<td>With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.</td>
<td>mg/kg</td>
<td>50</td>
<td>n.d.</td>
</tr>
</tbody>
</table>

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Test Report

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Note:
- ppm = mg/kg; 0.1% = 1000ppm
- RL = Reporting Limit
- n.d. = Not Detected
Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr²⁺ test method excluded)

1. Cutting - Preparation
2. Sample Measurement

Pb/Cd/Hg
- Microwave digestion / Hotplate digestion
- Filtration
- Solution
  - 1) Alkali fusion
  - 2) HCl to dissolve
- Residue

Cr²⁺
- Non-metal
- Metal
  - Boiling water extraction
  - Cool, filter digestate through filter
  - Add diphenyl-carbazide for color development
  - Measure the absorbance at 540 nm by UV-VIS

ABS / PC / PVC
- Dissolving by ultrasonication
- Digested at 150-160°C
- Separating to get aqueous phase

Others
- Digested at 60°C by ultrasonication
- pH adjustment
- Add diphenyl-carbazide for color development
- Measure the absorbance at 540 nm by UV-VIS
Test Report

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Analytical flow chart - Hexavalent Chromium Cr(VI)

1. Cutting - Preparation

2. Sample Measurement

3. Non-metal

   - ABS / PC / PVC
     - Dissolving by ultrasonication
   - Others
     - Digesting at 150-160°C
     - Digesting at 60°C by ultrasonication
     - Separating to get aqueous phase

4. Metal

   - Boiling water extraction

   - Cool, filter digestate through filter

   - Add diphenyl-carbazide for color development

   - Measure the absorbance at 540 nm by UV-VIS

5. pH adjustment

   - Add diphenyl-carbazide for color development

6. Measure the absorbance at 540 nm by UV-VIS

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PBB/PBDE analytical FLOW CHART

1. Sample pretreatment
2. Sample extraction / Soxhlet method
3. Concentrate/Dilute Extracted solution
4. Filter
5. Analysis by GC/MS

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Analytical flow chart of phthalate content

【Test method: IEC 62321-8】

1. Sample pretreatment/separation
2. Sample dissolved/extracted by THF
3. Dilute Extracted solution
4. Analysis was performed by GC/MS
5. Data

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* The tested sample / part is marked by an arrow if it’s shown on the photo. *

** End of report **